IMPERIAL
DEPARTMENT OF AGRICULTURE
FOR THE WEST INDIES

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REPORT

ON THE

AGRICULTURAL DEPARTMENT
ANTIGUA

1922-23.

BARBADOS.
ISSUED BY THE IMPERIAL COMMISSIONER OF AGRICULTURE
FOR THE WEST INDIES.

1924.

[Price Sixpence.]

REPORTS

ON THE

BOTANIC STATION, ECONOMIC PLOTS, AND AGRICULTURAL EDUCATION, ANTIGUA.

Annual Reports on Certain Economic Experiments conducted in connexion with the Botanic Station, 1900-2.

Annual Reports on the Botanic Station for the years 1901 and 1902.

Annual Reports on the Botanic Station, Economic Experiments, and Agricultural Education for the years 1902-3 to 1921-22.

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REPORT

ON

AGRICULTURAL DEPARTMENT

ANTIGUA

1892-93.

BARBADOS

PRINTED BY THE COLONIAL COMMISSIONER OF AGRICULTURE

FOR THE WEST INDIES.

1894.

[Price Sixpence.]

LETTER OF TRANSMITTAL.

No. A. 858.

25th April, 1924.

Sir,

I have the honour to forward the Annual Report on the Agricultural Department, Antigua for the year 1922-23.

2. It will be noticed both the sugar-cane and cotton crop suffered from adverse influences, the former from drought, the latter from a depressed market.

3. Commendable development is to be noted in respect of the Antigua Onion Growers' Association which is concerning itself with the marketing of pine apples as well as onions.

4. Careful and prompt attention appears to have been given by the Department to the question of the control of mosaic disease of sugar cane and pink boll worm of cotton.

5. The position in regard to the Land Settlement appears to be satisfactory.

I have the honour to be,

Sir,

Your most obedient servant,

(Sgd) FRANCIS WATTS,

Commissioner of Agriculture

for the West Indies.

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STAFF OF THE AGRICULTURAL DEPARTMENT, ANTIGUA
1922-23.

Agricultural Superintendent	F. G. HARCOURT, F.R.H.S.
Land Officer and Agricultural Instructor	H. G. BELL.
1st Assistant for Agricultural Experiments ...	A. C. THOMPSON.
2nd Assistant for Agricultural Experiments ...	H. A. HALL.
Clerk	MISS G. EDWARDS.

REPORT ON THE BOTANIC AND EXPERIMENT STATIONS, ANTIGUA.

For the Year ended March 31, 1923.

WORK IN THE BOTANIC GARDENS AND OBSERVATIONS ON PLANTS.

It has again to be recorded that a season of drought was experienced, making the third in succession, consequently the work in the Gardens has been concentrated on saving as many specimen plants as possible.

No improvements, beyond the remetalling of the principal walks and the pruning and shaping of flowering shrubs and trees, were carried out during the year.

Most of the buildings at the Botanic Station have been repaired and painted. The staging of the Conservatory has been considerably extended, thus enabling the Department to maintain and display a large assortment of decorative plants. The following were greatly admired and purchased by residents: Coleus, Zonal Pelargoniums, Cannas, Palms (assorted), Ferns, *Asparagus Sprengeri*, *Salvia splendens*, varieties Beauty, Zurich and Bonfire.

Large stocks of *Cassia grandis*, Hibiscus (assorted), *Grevillea robusta*, Crotons, Casuarinas. and Bougainvilleas were propagated and planted at Holberton Hospital, Government House, Sweets Reservoir, and the Paupers Cemetery, and were also offered for sale locally.

The flower garden, situated close to the Offices, has been maintained in good order, and in spite of the drought looked particularly bright for the greater part of the year.

The collection of xerophytic plants and the large Cohune and Attalea palms growing in the Quarry were a source of great interest to tourists who visited the Gardens.

WORK IN THE NURSERIES AND DISTRIBUTION OF PLANTS.

The buildings of the Nursery, i. e., Potting Shed and Propagating House, have been repaired and the nurseries maintained in good order.

The demand for planting material was greater than in the previous year and the stock of plants raised was considerable in spite of losses suffered through continued dry weather.

The following lists show the quantity of plants, cuttings and seeds distributed.

DISTRIBUTION OF PLANTING MATERIAL.

PLANTS AND SEEDLINGS.

Onions	63,634
Tobacco	8,000
Pine-apple	1,194
Mahogany	245
Cordia interrupta	88
Eucalyptus	84
Plumbago	115
Agave sisalana	320
Casuarina	308
Crotons	231
Mango	134
Miscellaneous Decorative	467
Miscellaneous Economic	172

SEEDS

Onion	444½ lb.
Sunflower	90 lb.
Bread & Cheese	15 lb.
Atriplex	1 lb.
Flower seeds	102 pkts.
Vegetable seeds	406 pkts.

CUTTINGS.

Sugar Cane vars.	96,300
Elephant grass	4,800
Aralia	210
Sweet Potato	80,200
Bougainvillea	450
Gliricidia	50
Barbados Cherry	300
Tripsacum laxum	100

OTHER PLANTING MATERIAL.

1 Collection of Gladiolus bulbs.
1 Collection Canna
1 Collection Cactus Dahlia

Onion plants, as in previous years, were sold to peasants or possessors of small gardens, who had no facilities for raising them.

The number of Sugar Cane cuttings distributed shows a decided increase as compared with recent years. The plants are sold by auction and represent the balance on hand after the Department's Experiment Plots have been planted and supplied.

Cuttings of Elephant grass (*Pennisetum purpureum*) were in great demand by planters. It is an excellent grass and withstands dry weather remarkably well.

As in previous years, Sweet Potato cuttings of first class varieties were distributed free to peasants and have been the means of considerably improving the quality of potatoes sold locally.

Plumbago capensis, Crotons and other decorative plants were propagated in larger quantities than in previous years to meet local demands.

The Mango plants distributed were principally the Calabash and Zabricot varieties.

There was a decided increase in the quantity of vegetable seeds distributed. A smalll stock of seed is always kept on hand by the Department.

As in previous years, Antigua formed the distributing centre for onion seeds for the Leeward Islands.

AGRICULTURAL EXPORTS.

The following table shows the agricultural products exported from the Island during the year 1923.

Article.	Quantity	Value.
		£
Sugar (Crystals)	8,351 tons.	166,923
Sugar (Muscovado)	1 bag	2
Molasses	129,785 gallons.	4,819
Cotton	69 bales.	1,140
Tamarinds	346 barrels.	332
Lime Juice	9 casks.	90
Green Limes	45 barrels.	46
Onions	3,417 crates.	2,300
Pine-apples	to the value of	37
Oranges	„ „ „ „	10
Vegetables	„ „ „ „	61
Hides and Skins	„ „ „ „	578
Turtle Shells	„ „ „ „	155
Live Stock		
Horses	6 head.	65
Donkeys	26 „	68

PLANTS AND SEED IMPORTATIONS.

Two hundred plants of various varieties of Crotons (*Codiæum spp.*) were imported from the Agricultural Department, Trinidad. These were planted in Government House Grounds and are growing well.

Fifty plants of *Casuarina equisetifolia* were also imported from Trinidad for the same purpose and a further hundred from St. Kitts for planting an avenue leading from the Factory Road to Holberton Hospital.

Seeds of Alfalfa, vars. Inverniza N 3 and Medanos, were received from the Imperial Commissioner of Agriculture for trial at the Experiment Station. The seeds germinated well, but the plants made very little growth, suffering severely from the continued drought.

Seeds of *Cosmos sulphureus* from Aburi, Gold Coast, were received through the Commissioner of Agriculture. This Cosmos is very floriferous, bearing an abundance of pale yellow flowers, valuable for cut purposes. It has flowered well in the beds in the Botanic Station and has been much admired.

A collection of seeds of Acacia species has been recently imported for trial

The thanks of the Department are due for the undermentioned seeds :—

	Received from
Nicotiana rustica vars.	United States Department of Agriculture.
Nicotiana rustica vars.	Agricultural Superintendent, St. Kitts.
Cassia siamea Double Pink Coralita Alfalfa " sunflower	Superintendent of Agriculture for the Leeward Islands.
Olives, Mission and Barouni	United States Department of Agriculture.

Plot Experiments at the Skerrets Experiment Station.

YAMS.

The following varieties of yams were grown for supplying planting material to allotment holders and planters.

Variety.	Rods Planted.	Return in lb.
Lisbon	80	462
Crop	70	429
Oriental	60	396
Seal Top	48	363
Bottle Neck Lisbon	40	462
Light Red	36	530
Horn (2 varieties)	25	172
Danish	15	78
	374	2,892

Local Rod = 10 feet.

Most of the crop has been sold to planters for planting purposes, which illustrates that the efforts of the Department in encouraging planters to grow more ground provisions are meeting with some measure of success.

Eddoes & Tannias.

The following varieties were grown for the purpose of supplying planting material for distribution :—

Tannia Islena, Tannia White, Tannia Roliza, Tannia Yellow, Tannia Priete, Red Eddoe, White Eddoe, and Eddoe Dasheen.

Dry weather affected the crops considerably and yields were small.

Sweet Potatoes.

Several plots of selected varieties of sweet potatoes were grown for the purpose of providing cuttings for distribution to growers.

The practice of supplying peasant growers with clean cuttings, free of charge, for planting up areas which have been burnt off, in consequence of

severe attacks of Scarabee, (*Cryptorhynchus batatae*), was continued. It is encouraging to report that this pest is not nearly so general as in former years and that potatoes of good quality are now supplied to the local market.

Fodder Experiments.

Elephant Grass, *Pennisetum purpureum*, recently introduced by the Department, has proved an excellent grass for Antigua. Distribution has been made so that it can now be seen growing in nearly all districts.

Several planters, who gave the grass a trial last year, are now planting large areas.

Every planter should have a small plot of this grass for trial and extend its cultivation to meet his requirements.

Guatemala Grass, *(Tripsacum laxum)*, is growing well at the Experiment Station and cuttings have been distributed to interested planters. It is not however, in so great a demand as Elephant grass.

SPECIAL INVESTIGATIONS BY AGRICULTURAL OFFICERS.

Cotton Selections.

Cotton Selection work was continued on the best types of cotton selected from the progeny rows of cotton grown at Skerretts, and which were originally selected from cotton grown on Yeptons Estate.

On examination, it was noticed that Nos. 271-18/1/8, 276-2/14/3, 278-2/1/6, 278-2/1/34 and 278-2/6/35 compared favourably with the parent plant, and it has been decided to plant these types for future selections.

All types show a slight falling off in average lint length, seed weight, and lint index. This undoubtedly is due to the weather conditions being most unfavourable to plant growth throughout the whole season.

The following tables record the results of the examination of the seed cotton reaped from plants selected on merit of their field characters.

SELF-POLLINATED FLOWERS.

Plant.	Average Lint Length.	Lint Index.	Lint per cent.	Seed Weight.	Available Fibre per cent.	Weak Fibre per cent.	Short Fibre per cent.
271-18-1-4	49·8	3·610	25·525	10·770	38·0	24·7	37·3
271-18-1-8	49·6	4·160	27·260	9·865	42·4	14·5	43·1
271-18-1-25	47·6	3·935	22,790	11·735	37·4	29·1	33·5
276-2-5-3	46·2	3·430	25·720	10·805	32·9	29·0	38·1
276-2-5-34	48·4	3·755	24·020	10·860	35·3	23·4	41·3
276-2-5-36	47·2	3·165	24 500	11·370	32·2	24·6	43·2
276-2-14-3	49·0	4·090	26·640	10·990	37·3	24·2	38·5
276-2-14-7	48·4	3·685	24·640	10·790	36·4	25·4	38·2
276-2-14-9	48·4	3 875	26 680	11·435	39·6	24·1	36·3
278-2-1-6	49·0	3·965	28·820	11·520	29·5	31·2	39 3
278-2-1-28	49·8	3 660	24·410	11·855	35·4	31·4	33 2
278-2-1-34	50·0	3·730	26·180	11·200	38·6	26·8	34·6
278-2-6-1	50 0	3·685	25·420	11·985	41·2	26·4	32·4
278-2 6-30	49·6	3·890	26·050	11·370	39·4	24·5	36·1
278-2-6-35	49·8	3·570	27·380	11·725	35·4	28·2	36·4

UNSELFED FLOWERS.

Plant.	Average Lint Length.	Lint Index.	Lint per cent.	Seed Weight.	Available Fibre per cent.	Weak Fibre per cent.	Short Fibre per cent.
271-18-1-6	49·0	3·595	24·755	10·065	35·1	26·5	38·4
271-18-1-9	48·4	3·985	24·610	11·980	40·2	25·1	34·7
276-2-20-5	49·4	3·680	25·725	11·775	37·8	26·0	36·2
276-2-20-21	47·2	3·010	25·600	11·680	39·4	29·2	31·4
278-2-25-4	49·8	4·215	26·210	11·975	36·3	24·1	39·6
278-2-25-12	49 6	3·980	26·010	11·785	38·5	30·1	31·4

Surplus seed from the previous year's experiments was planted at Gaynors and Collins estates and it is intended to reserve all resultant seed for planting on a large scale at Brookes estate, for the purpose of obtaining sufficient material for general distribution throughout the island.

Work in Connection With Insect and Fungus Pests and their Control.

Mosaic Disease Of Sugar Cane.

Leaves showing symptoms very suspicious of Mosaic Disease were observed on young Sugar Cane plants of the S. C. 12/4 variety, growing on Cedar Hill Estate. Over 200,000 cuttings of this variety, had been recently imported from St, Kitts by planters in the island. Other estates were then carefully inspected and plants similarly affected were observed.

Specimens were immediately prepared and forwarded to the Imperial Department of Agriculture and all fields planted with the variety S. C. 12/4 were carefully inspected by members of the staff of the local Department, all canes showing abnormal conditions being destroyed by burning.

A circular was sent to all planters calling attention to the discovery and giving a short summary of the disease, its symptoms and methods of control

Planters were also met on the spot and shown affected plants in order that they might become familiar with the disease and hence report any suspicious cases to the Department.

A Special general Meeting of the Agricultural and Commercial Society was held on February 23 to consider the report of the Superintendent of Agriculture for the Leeward Islands and the Agricultural Superintendent, as to the extent of mosaic disease in Antigua and to decide what steps would be taken for its control. After considerable discussion, the following resolution was passed :—

" This Society, after lengthy discussion, considers it advisable to absolutely destroy all plants of the S. C. variety and asks the co-operation of planters to do this at once, and asks His Excellency the Governor to introduce an Ordinance to ensure the carrying out of this recommendation."

The suspicion of the Department being subsequently confirmed by Professor Ashby of the Imperial Department of Agriculture planters commenced destroying this variety.

The imported canes, however, did not germinate well and had to be supplied with other varieties of cane. In these supplies, secondary infection was discovered in a few plants of the following varieties :

B.3922 (5 plants), B.6308 (1 plant,) White Transparent (1 plant), B.6834 (5 plants), and A.391 (3 plants).

All fields are being carefully watched as many plants of the S.C. 12/4 variet were overlooked when eradication was first attempted by the planters.

Owing to the voluntary co-operation of planters, total expenses of eradication have been very small and under £20.

Cotton.

The Cotton Worm. A constant supply of Paris Green is kept stored for the purpose of loaning small quantities to planters should merchants run out of stock. This assistance is very much appreciated by Cotton growers.

Pink Boll Worm. The daily fumigation of cotton seed at the Ginnery is anpervised by officers of the Department. All seed for planting purposes passes through the hands of the Department, where it is selected and again fumigated before delivery to the growers. A certificate to this effect is given on delivery of the seed and must be shown by the grower on demand.

It would appear that these precautionary measures are having effect, as Pink Boll Worm did not appear so plentifully as during the previous season.

Fumigation of Plants.

All planting material, imported into the Presidency, is immediately handed over to the Agricultural Department, where it is fumigated, or dealt with as considered necessary, to prevent the spread of disease.

Summary of Legislation in Antigua Affecting Stock and Crops.

Animals.

Swine Epidemic Act 3 of 1893 gives extended power to Board of Health for the prevention of the spread of diseases among animals.

City of St. John's By Law 13 of 1897. Registration of butchers and inspection of animals for slaughter or meat in market by Veterinary Surgeon and authorises, destruction of unwholesome food.

City of St. John's By Law 13 of 1899. City By Law for the purpose of dealing with cattle diseases.

City of St. John's By Law 2 of 1911 regulates the keeping of animals in municipal areas and inspection etc. of stables in the city.

Ordinance 7 of 1913. An ordinance to prohibit the introduction of Mongoose into Barbuda.

Diseases of Animals Ordinance 16 of 1913. Repeals and amends the law relating to contagious diseases among animals. Animals and diseases clearly defined. Inspectors empowered to visit and inspect estate premises etc. for diseased animals and to ensure that provisions are carried out. Suspected animals to be examined by Veterinary Surgeon and on his (positive) report shall be slaughtered.

Cruelty to Animals Amendment Act 3 of 1919. Amends acts of 1880 and 1916 and provides a fine not exceeding £5 for anyone guilty of cruelty, beating, ill-treating or starving any animal.

Ordinance 8 of 1920. The Diseases of Animals (Amendment) Ordinance 1920. An ordinance to amend further the Diseases of Animals Ordinance 1913. States that the Governor may, by Order-in-Council, revoke, amend or vary any Order-in-Council issued under the provisions of this section.

Ordinance 12 of 1920. Exportation and Importation Prohibition Ordinance 1920. Sanctions prohibition of exportation and importation of any article by Order-in-Council (to include live and dead animals).

Ordinance 10 of 1922. Provides for the taxation of certain animals (donkeys and horses).

Order-in-Council dated 29th September 1922. Prohibits landing of animals of any kind when brought from islands of St. Christopher and Nevis.

Milk.

Adulteration Act 6 of 1884. Provides for the examination of milk and also fines for adulteration in the island of Antigua.

City of St. John's By Law 1 of 1917. Provides for the examination of milk and also fines for adulteration in the city of St. John's

Ordinance 4 of 1919. Adulteration Ordinance. Amends subsection 1 of Section 24 of the St. John's City Ordinance 1907 and provides that By Laws made for the purpose mentioned in the above Ordinance of 1907, so far as may be necessary for affecting such purpose, be made applicable throughout the Presidency.

By Law No. 1 of 1922. A By Law ordained by the St. John's City Commissioner to regulate the supply and sale of milk within the City of wt. John's

PLANTS.

Plant Protection Act 4 of 1897. Prohibits importation of Coffee or Coffee plants from Ceylon, Mauritius, Reunion, Fiji, Southern India, Sumatra, Java, Natal and other such places as may be proclaimed under the Act. Power to prohibit importation of other articles to introduce disease among plants and to seize prohibited importations.

Plant Fumigation Ordinance 5 of 1905. Provides for the fumigation of plants imported into the Presidency.

Proclamation dated 2nd January 1923. Prohibits the importation into Antigua of Banana plants and parts of Panana plants, including their fruits, from British Guiana, Central America, or any island or place in the West Indies, except the islands of Barbados, St. Vincent, Grenada, and the other islands of the Colony of the Leeward Islands.

AGRICULTURAL PRODUCTS.

Agricultural Produce Protection Ordinance 1913. Purchaser of Agricultural produce to have a license.

Cotton Traffic Ordinance 5 of 1906. Regulates local traffic in cotton. No person to sell or purchase cotton without a license. Purchaser to keep a Purchase Book.

Ordinance 9 of 1920. Export Duty Ordinance to impose a duty on sugar, molasses, cotton and syrup.

Produce Protection Ordinance 20 of 1922. Growers or Sellers, of Cacao, Maize, Coco-nuts, Limes and Wood of any description to have a license. Repeals Agricultural Produce Protection Ordinance 1913.

Order-in-Council dated 13th November 1922. Adds Pine-apples and Onions to produce Protection Ordinance 1922.

COTTON.

Proclamation of August 4th, 1917.—Prohibits importation of cotton seed and seed cotton into the Presidency from all countries outside the Leeward Islands except small quantities of seed specially imported with the permission of the Agicultural Superintendent.

Proclamation dated 9th, December 1920.—Prohibits importation from all places of cotton seed, seed cotton, lint, baling cloth or any article coming into direct contact with cotton produce.

Ordinance 7 of 1922.—The Cotton Protection Ordinance 1922. An Ordinance to provide for the protection of cotton.

SUGAR CANE.

Proclamation of September 28, 1916.—Prohibits the importation of cane plants or parts of sugar cane from Trinidad into the Presidency of Antigua on account of Froghopper pests, *Tomaspis spp.*

Proclamation of 15th, December 1920.—Prohibits the importation of cane from all places except under license given by the Governor (on account of spread of Mosaic Disease)

Manufacture of Sugar Act 108 of 1850.—Prohibits the use of acetate of lead in the manufacture of sugar in the Island.

Citrus Plants.

Proclamation dated 5th. March 1919:—Prohibits the importation into the Presidency of Antigua of Citrus plants and parts of Citrus plants including their fruits from British Guiana or any island or place in the West Indies other than St. Lucia, Dominica, Montserrat and Grenada.

Proclamation of September 28. 1918.—Prohibits importation of rooted plants of, citrus family from United States of America, Jamaica, Cuba, Hayti and Santo Domingo, unless accompanied by a certificate signed by a responsible inspection officer stating that the district from which they originate has not been affected by or has been free for the past two years of Citrus Canker.

Proclamation dated 6th September 1922. Prohibits the importation of Lime plants and parts of Lime plants including their fruits, into the Presidency, from British Guiana, Trinidad and Dominica.

Coconuts.

Proclamation dated 27th February 1919. Prohibits the importation of sprouted coconuts from Trinidad and Grenada, owing to the presence of Red Ring Disease.

Progress in the Chief Industries.

The Sugar Industry.

The season under review was one of great anxiety to the Sugar Industry, it being the third year in succession experienced without "pond rains." As can be well imagined, crops suffered severely, yields being considerably below the average,

The weather conditions during the year were most unsuitable for plant growth. This, coupled with the poor prices realised for sugar, made it one of the most trying years the Antigua planter has ever experienced.

The Directors of the Antigua Sugar Factory, in their annual report for 1922, state:—

"For the Island of Antigua, the year 1922 has been disastrous. Our last Report stated that 1921 had been the most anxious and difficult time since the Factory had been erected and also recorded a prolonged drought. But 1922 added another year to the drought, water was more difficult to obtain than ever, and what there was was impure causing trouble in the Factory and locomotive boilers, the latter leading to the transport of canes being much hindered. The canes of 1921 were considered the poorest Antigua could produce, but 1922 has given worse, lower in sucrose and lower in purity of juice, and in consequence of this the yield of sugar from the canes has been 10 per cent. below our average."

The following table, taken from the same report, give the results of the year and a comparison with previous years:—

		1922.	1921.	1920.	Average of 1915-1919.
Canes	Tons	81,585	80,182	93,793	90,189
Sugar	„	8,219	8,949	10,638	9,904
Sucrose in Cane	%	12·05	13·02	13·02	12·57
Fibre in Cane	„	18·63	17·73	16·90	16·66
Sucrose in Megass	„	3·37	3·13	3·09	2·79
Purity of Juice	„	80·12	82·15	82·92	83·70
Recovery of Sucrose in Cane ...	„	80·22	82·36	83·62	83·90
Yield of Sugar	„	10·08	11·15	11·35	10·98
Price of Sugar	per ton	£16.8.6	£26.8.3	£37.0.4	£19.13.5

The weight of canes sent to Bendals Factory amounted to 16,300 tons, the output of crystals being 1,417 tons, as compared with 16,763 tons of cane delivered and 1,516 tons of sugar made in 1921-22.

The Cotton Industry.

The Cotton Industry, which in 1907-8 occupied an area of 2,508 acres, has now dwindled down to 396 acres. The causes of this decrease are undoubtedly the low price paid for cotton and the considerable delay in getting a sale for it. This, coupled with the uncertainty of the prospects of the crop, owing to repeated warnings issued that the supply was in excess of the demand, has so discouraged the larger growers that at present there are but three fairly large growers in the Presidency

There is also a marked difference in the price usually paid for Antigua cotton in comparison with that of the other West Indian Islands, and it would appear that this is not due solely to the difference in value, but that the quantity is not sufficient to receive full consideration from the buyers.

This industry is practically in the hands of the peasants, who are not in a position to market their crop except through the services of the Antigua Cotton Growers Association, the members of which give their services voluntarily and do not benefit in any way pecuniarily. This Association buys the seed cotton at a fair open rate and subsequently pays three-quarters of any profits accruing back to the growers in the form of bonus.

Larger planters would undoubtedly take up the industry again if a fixed minimum price would be guaranteed for a number of years.

Progress in Minor Industries.

The Cotton Industry.

Peasants planted considerable areas with maize, but owing to the dry weather very poor yields were obtained, insufficient for local demands.

Large areas are again being planted, and the Agricultural Department is offering the best market price for dried, shelled corn, grown by the peasants, in order to encourage the small growers to take up the industry,

The Lime Industry.

The industry is at a standstill. Lime cultivations in certain districts are being maintained, but have suffered considerably owing to the continued dry weather.

The Onion Industry

The area planted compared favourably with the previous year, and in spite of the dry weather a fair crop was reaped. The crop was not attacked by any serious pests.

The Pine-Apple Industry.

During the year under report, the Department energetically endeavoured to revive interest in the growing of pine-apples. A certain measure of success has been achieved and it is estimated that approximately 20,000 plants were planted during the year by planters and peasant growers.

Small trial shipments were made to New York and Canada. The report received from New York was not favourable, but the Willet Fruit Company, St. John, N. B, reported as follows :—

"We received the trial shipment of two crates of pines in good order. These arrived at a time when we were receiving lots of pines shipped from Porto Rico and Cuba which as you know are packed in standard uniform crates which the trade is accustomed to buy.

The trouble we find in handling products from your Island and other West Indian Islands is that they do not pack their fruits in uniform standard crates similar to what the trade is usually accustomed to handle and this fact tends to lower the price. We have noted that oranges shipped from Dominica and other islands packed in any kind of a rough box or barrel will not bring the price that can be got for Jamaica or Porto Rico oranges packed uniformly in the regular standard-size boxes such as the fruit trade use in Florida and California. We believe that if you would encourage your people to put up pines the same way they do in Porto Rico, that is, 24, 30 and 36 to the crate, all the same sized pines in each crate, there would be a good market for them here and elsewhere. We would advise shipping in the refrigerated space on the boat at a temperature of from 55 to 60 degrees."

These reports were put before the Agricultural & Commercial Society and the question of reviving the pine-apple industry thoroughly discussed. The Society unanimously decided that pine-apple growing should be encouraged and recommended that the Onion Growers Association should extend its operations to include the handling and exporting of that produce. The Onion Growers Association subsequently adopted the recommendation of the Agricultural Society and amended rules accordingly.

Further shipments of pine-apples will be made to Canada next season and will be packed in uniform standard crates, as recommended by the Willet Fruit Company.

Efforts in Connection With Agricultural Progress.

Antigua Onion Growers Association.

During the season, the Onion Drying House was open from February 23rd to May 5th,

130,021 lb. of Onions were received for curing etc. and the total number of crates shipped was 2,475.

Good prices were realised for all the first shipments made, especially in the Guadeloupe market, where the nett price was approximately 15 cents per lb. The prices however subsequently declined as our onions met shipments from other places.

The following table shows the number of crates shipped and the gross and nett prices realised in each market.

Market.	No of Crates Shipped.	Gross Price per lb.	Nett Price per lb.
		Cents.	Cents.
St. Lucia	50	5	4
Trinidad	712	4 to 10	3 to 9
Guadeloupe	350	3 to 18	2 to 15
Demerara	695	3 to 14	1 to 14
Barbados	220	4½ to 13	3 to 10
Martinique	325	2 to 11	½ to 10
Grenada	110	10 to 12	9 to 11
St. Vincent	14	6	4

The following table shows the various expenses per crate :—

Onion House Expenses			
Labour	6·9	cents per crate	
Actual first cost of crates shipped.	40·0	„ „ „	
Nail account	3·4	„ „ „	
Overhead charges ...	6·1	„ „ „	56·4
Shipping Expenses			
Cartage	4·0	„ „ „	
Porterage & Lighterage	7·6	„ „ „	
Freight	32·3	„ „ „	43·9
			100·3

In the year 1919-20 the expenses per crate amounted to 131 9 cents and in 1920-21 to 106·3 cents. Therefore the expenses for the present season, i. e., 100·3 cents, shows a decided decrease.

The prices quoted show a marked improvement on those of last year and the Board of Management were able to pay 4·5 cents to growers.

The Board of Management consisted of the following :—

A. P. Cowley, Esq, M.B.E. (Chairman), A. E. Collens Esq. F.I.C., N. S. Johnston Esq., R. S. D. Goodwin Esq. E. D. Dew Esq. and F. G. Harcourt (Hon. Secretary).

It was again found advisable to engage a manager for the Onion House and Mr. H. A. Harney was appointed. He superintended the working of the Onion House under the direct control of the Hon. Secretary.

Antigua Cotton Growers Association.

Crop Reaped 1921.

During the season under report the Association provided members and others with selected seed for planting purposes. The seed was selected under the supervision of officers of the Agricultural Department, and was as in former years, obtained from Yepton's estate, the property of the Honourable R. A. L. Warneford.

The quantity or seed selected and distributed to estates and peasant growers amounted te 4,238 lb.

During the season, 61,006 lb. of clean seed cotton were purchased at 10 cents per lb. and 512 lb. at 9 cents making a total of 62,418 lb.

The financing of the Association was arranged for by advances through a local firm of merchants and the Honourable R. Warneford. The amount advanced was $3840. 00 considerably in excess of previous years.

Great anxiety was felt by the Board of Management owing to the very poor prices paid for Sea Island Cotton and of the sudden drop from at least 4/- per lb. at the commencement of the season to 1/4 towards the end.

In view of falling markets it was decided to offer 5d. per lb. first payment for seed cotton, equivalent to a purchasing price of 1/3 per lb, lint, as it was felt that the season's price for cotton would be in neighbourhood of 2/6 per lb., but with the unexpected drop to 1/3 the Association found itself loaded up with cotton purchased at 2/-, and faced with a financial loss of at least £500. The Board was at its wits end as to what to do for the best. Its anxiety was not allayed until November 1921, when, thanks to the efforts of the Hon. R. Warneford, the Association sold its cotton locally at 2/2 per lb. and thereby averted any financial loss for the season.

Owing to the high first payment made and the reasons enumerated above, the Association were unable to pay a bonus to the peasants.

The working of the Association was controlled by a Board of Management consisting of the following:—

A. P. Cowley, Esq., M.B.E. (Chairman), Hon. R. Warneford A. F. Collens, Esq., F I.C., N.S. Johnson Esq., E.D. Dew Esq and F.G. Harcourt Hon. Secretary.

The work of buying seed cotton from the peasants selecting seed etc, was in the hands of Mr. Harcourt.

Crop Reaped 1922.

As in previous seasons, members were provided with selected seed for planting purposes.

The quantity of seed distributed was 914½ lb., considerably less than the previous year, owing to the unsatisfactory condition of the cotton market.

It was not necessary for the Association to arrange for any loans during the season.

Clean seed cotton purchased from peasant growers amounted to 3,1274 lb., 6 cents per lb. being the first price paid.

The quantity of clean lint obtained was 22 bales of 250 lb. each, which were sold locally at 33 cents per lb.

Sugar-cane Experiments.

The Sugar-cane nurseries were maintained in good order and were a source of interest to many planters who visited Skerretts Experiment Station.

The varieties of cane B. 12, B.S.F. 12-24, B.S.F. 12-27, and B.S.F. 12-34 have been introduced into the trial plots on various estates throughout the Island.

The B.S.F. varieties are interesting several planters, who have already applied for cuttings.

The variety S.C. 12/4, imported for trial from St. Kitts, grew remarkably well in spite of dry weather and promised to be a valuable introduction, but it was decided to eradicate this variety from the nurseries, owing to Mosaic Disease being discovered in further importations made from that Presidency by planters.

Extension of Interest in Agricultural Matters.

ANTIGUA AGRICULTURAL AND COMMERCIAL SOCIETY.

A General Meeting of the Society was held on the first Friday in each month during the year and in addition two Special General Meetings were held, at which the outbreak of Alastrim in Antigua and the discovery of Mosaic Disease of Sugar-cane were discussed. Nine Committee Meetings were also held.

The average attendance during the year was fairly good.

LAND SETTLEMENT IN ANTIGUA.

The Land Settlement scheme at Sawcolts having proved a success, it was decided to extend the scheme to other Crown Lands in Antigua.

The Agricultural Superintendent arranged and addressed meetings of peasants at Piccadilly, Bethesda, Liberta and Sweets Village, making this decision known, explaining the rules governing the sale of Crown Lands and inviting applications for purchase of lands at Clare Hall, Piccadilly and Wallings.

The various ministers of religion took a great interest in the scheme and gave valuable assistance by presiding at and arranging the various meetings held.

At all the meetings the peasants expressed great satisfaction and pleasure at being given the opportunity to purchase the lands, and within a short time, the whole of the Crown Lands at Clare Hall and Wallings were applied for.

The progress made to date is as follows :—

Sawcolts

The general appearance of the allotments is very satisfactory and the land is occupied with useful crops. The principal crops grown are sugar cane, pine-apples, sweet potatoes, cassavas, eddoes, yams, etc., all of which find a ready market locally.

Officers of the Department visit the Settlement regularly and advise the allottees on problems in connection with the growing of their crops, insect and fungus pests, and the marketing of produce. This assistance is very much appreciated by the peasants.

During the year 8 new plots, representing a total area of 7 acres 3 roods 10 poles, were made and one allottee gave up his land.

The total number of allottees installed at Sawcolts has now increased to 72, and the area allotted 76 acres, 2 roods 4 poles, valued at £564 17s 6d.

Very little trouble is experienced in collecting money from the allottees who have made payments amounting to £263 6s. 9d. to date.

It was estimated in 1918, that only about 80 acres, after reservations had been made, could be regarded as good, arable land. It will, therefore, be seen that practically all the good lands have now been given out.

Clare Hall.

Clare Hall estate, approximately 250 acres in area, is situated about 1 mile north east of the city of St. John's. The greater part of this area can be regarded as good, arable land, which for a number of years has been rented out to peasants by the Government.

The estate has been surveyed and laid out in allotments, every effort being made to give existing tenants the opportunity of purchasing the same plots that they have been cultivating.

Between each allotment, a space for roads has been marked off in such a manner as to enable an allottee to cart his produce to the main road, without trespassing on the land of his neighbour.

A certain portion of the land has been reserved as common land on which allottees may tether their stock. Land has also been reserved for a village, house spots to be sold to allottees and others on reasonable terms.

Practically all the good lands have been applied, for 119 applications have been received for a total area of 181 acres, representing a value of £1,639 4s. 6d.

Up to the end of March 1923, 65 allotments of a total area of 98 acres, 3 roods 37 poles, have been allotted.

One allottee has paid for his land in full.

Wallings and Piccadilly.

These lands have not yet been surveyed. About 30 applications to purchase have been received.

The following rules govern the sale of Crown Lands in Antigua.

RULES.

Made by the Governor-in-Council for the sale of Crown Lands in the Island of Antigua.

1. In these Rules the expression "Crown Lands" means the lands known as Sawcolts, Piccadilly, Wallings Estate and Clare Hall but shall not include that portion of Clare Hall lands governed by Regulations made by the Governor-in-Council on the 2nd day of August, 1921, under section 5 of the Villages Improvement Ordinance, 1913.

2. Crown Land shall, save as hereinafter provided, be surveyed before any allotment of it is made and the administration and disposal of such lands and

of all details connected therewith shall, subject to these rules and to such orders as may be given by the Governor, be entrusted to the "Agricultural Superintendent."

3. In making the survey the following Reserves shall be made :

(1) All ponds and wells, the beds and banks of rivers and of any important stream or tributary, and a space of half a chain around the source and on either bank thereof :

(2) Swamps, exposed ridges and such forests as may be deemed necessary for the purposes of Forest Conservation :

(3) Such land, including sites for Churches, Chapels Schools or other public purposes, as may be necessary or desirable for the general good :

(4) Such lands as may be necessary for roads or paths to each allotment or group of allotments :

(5) Such lands as may be requisite for villages or common land.

4. The remainder of the Crown land shall be divided into allotments of not less than one and not more than four acres each and no lot shall be larger than four acres except with the consent of the Governor. In surveying the land for allotment the surveyor shall as far as possible include in one allotment any cultivation of an existing tenant on the land.

5 Each allotment shall be numbered and shall have its number clearly displayed on some part of it.

6. Every corner of each allotment shall be marked by turpentine posts 6 feet in height or stone pillars and the general outline in such manner as the Agricultural Superintendent may decide The paths and roads which abut each allotment shall be kept free of weeds and bush by the allottee.

7. The Agricultural Superintendent shall keep a Register in a form approved of by the Governor in which shall be recorded : —

(a) The number and area of each allotment.
(b) The name of the allottee.
(c) The date of the allotment.
(d) The sums paid on account of instalments and the dates of such payments.

(e) Such other particulars as the Governor may prescribe.

8. The Agricultural Superintendent shall then by notice in the Gazette, or in any other way he may deem desirable invite applications, (which must be made on printed forms to be obtained from the Botanic Station) for allotments, and on expiration of 14 days from the date of the Notice shall proceed, subject to the Governor's approval, to allot the same in accordance with the following rules :— provided however that he shall not make an allotment of land to any person who is already an owner of land without the sanction of the Governor.

9. Allotments shall be made in the order of date of application.

10. (i) The Agricultural Superintendent shall, on the payment by the Applicant of an instalment equal to one-tenth part of the purchase price of an Allotment, issue to the applicant or Allottee a conditional Permit to occupy the Allotment in respect of which the payment is made.

(ii) The Allottee shall at the expiration of one year from the date of such Permit and at the same date in each succeeding year pay an instalment of the like amount until the purchase price of the Allotment be fully paid and satisfied.

(iii) Notwithstanding anything in this rule contained, an Allottee may

(a) at the time of allotment pay the purchase price in full, or

(b) at any time after allotment pay off any instalment or instalments outstanding.

11. The purchase price of an Allotment shall be from £4 to £10 per acre according to the quality of land.

12. An allottee of any allotment shall before accepting his Conditional Permit to occupy any allotment, satisfy himself that the area of the allotment is equal to that stated in his Conditional Permit.

13. A certain proportion of land shall be reserved as common land on which each allottee shall be allowed to graze not more than two animals of the following class : - cattle, horses or donkeys, together with two animals of the following classes :—sheep and goats. Any cattle, horses or donkeys above eleven months old shall be reckoned as animals within this provision and similarly any sheep or goat above six months old. Animals grazing on common lands must be securely tethered.

14. (*a*) Land reserved for a village under Rule 3 shall be called a "Village Lot" and shall be laid out in house spots not exceeding 60 feet square each, with suitable space for streets and cross streets to afford access to such house spots.

(*b*) For the purpose of valuation, a house spot shall be treated as an allotment and its value fixed at the rate of fifteen shillings per annum.

(*c*) Every allottee of allotment shall be entitled to purchase and hold a house spot on the adjacent Village Lot, so long as any remain unsold, on the same condition as an allotment may be purchased and held.

15. House spots may be sold or leased to persons who are not allottees.

16. The condition of tenure of allotment shall be as follows : —

(*a*) Every purchaser shall for a period of two years reckoning from the date of allotment reside ordinarily in Antigua. If absent at the time of allotment he shall take up his residence within six months after obtaining a Conditional Permit under these regulations unless the Curator with the approval of the Governor shall otherwise permit.

(*b*) No land may be alienated, let or incumbered for a period of ten years from the date of allotment without the consent of the Governor.

The word "alienated" does not refer to or include an involuntary alienation as in the case of descent or bankruptcy : nor in alienation partly involuntary as in the case of a devise by will.

(*c*) Every allottee shall beneficially occupy the land to the satisfaction of the Governor.

(d) The Governor may at any time resume possession of any part or parts of an allotment not exceeding one-tenth of the said allotment for roads, on paying therefor at the same rate per acre as that at which the allotment was originally sold and also for the value of such crops as may be on the selected line of road.

(e) All instalments shall be punctually paid, on or before the day on which they are due.

(f) Every purchaser or holder of a house spot shall provide and maintain in good order to the approval of the Curator a latrine or other sanitary convenience for the use of himself and his family.

17. On failure by an allottee of an allotment or house spot to comply with any of the conditions of tenure hereinbefore detailed, the Agricultural Superintendent shall immediately report all the facts of the case to the Governor, who shall enquire as fully as possible into all the circumstances of the default, whereupon he may order that the right to such allotment or house spot, and all crops, and all instalments paid and all other rights of the allottee shall be forfeited without any appeal to any Court or may make such order as the circumstances of the case may require.

18 Notice of an order so made shall be served upon the allottee or left at his last known place of abode, and no act of reentry shall be necessary, and such allotment or house spot shall be at the disposal of the Governor, either to resell then or at any future time.

19. On payment in full by an allottee of the purchase money of any allotment or house spot, he shall be entitled to a grant of the same. Such grant shall be in a form approved by the Governor-in-Council and shall be recorded in the Record of Deeds or in the Register of Titles as the case may be, free of all cost to the allottee, except stamp duty.

20. All former Rules in respect of the Crown Land to which these Rule apply are hereby rescinded so far as relate to the said Crown Land.

Made by the Governor-in Council under section 3 of the Crown Lands (Rules), Ordinance, 1917, this 8th day of December 1922.

A. D. W. SKINNER.

Clerk of the Council.

Details of Administration.

Expenditure and Receipts.

The total expenditure for the year, including Personal Emoluments, amounted to £1,531 17*s.* 8*d.* and the receipts for sale of plants and seeds to £60 6*s.* 3*d.*

Staff Changes.

Mr. E. S. Eldridge resigned his appointment as Land Officer and Agricultural Instructor in October 1922, and Mr. H. G. Bell was appointed in his place.

Mr. A. C. Thompson was promoted to the post of 1st Assistant for Agricultural Experiments in June 1922, and Mr. H. A. Hall was appointed 2nd Assistant for Agricultural Experiments in July of the same year.

Correspondence.

Letters to the number of eight hundred and eight were sent out from the Botanic Station, and in addition several minute papers received attention.

Official Visits.

Professor F. Hardy, M. A., Dip. Ag., Research Chemist on the Staff of the Imperial Department of Agriculture, visited the Botanic and Experiment Stations on two occasions during the year.

Hon. A. E. Collens, F.I.C.,F.C.S., Superintendent of Agriculture for the Leeward Islands visited the Stations on several occasions.

AVERAGE RAINFALL, 1874-1922.

In	1874	the	average	rainfall	on	41	Stations	was 31·16
„	1875	„	„	„	„	40	„	„ 28·78
„	1876	„	„	„	„	36	„	„ 41·98
„	1877	„	„	„	„	38	„	„ 49·05
„	1878	„	„	„	„	53	„	„ 47·11
„	1879	„	„	„	„	52	„	„ 61·54
„	1880	„	„	„	„	46	„	„ 49·68
„	1881	„	„	„	„	44	„	„ 53·75
„	1882	„	„	„	„	45	„	„ 33·04
„	1883	„	„	„	„	56	„	„ 55·51
„	1884	„	„	„	„	56	„	„ 43·98
„	1885	„	„	„	„	53	„	„ 43·39
„	1886	„	„	„	„	55	„	„ 47·78
„	1887	„	„	„	„	50	„	„ 43·68
„	1888	„	„	„	„	47	„	„ 44·23
„	1889	„	„	„	„	50	„	„ 73·59
„	1890	„	„	„	„	45	„	„ 33·00
„	1891	„	„	„	„	45	„	„ 50·01
„	1892	„	„	„	„	53	„	„ 38·43
„	1893	„	„	„	„	54	„	„ 38·69
„	1894	„	„	„	„	68	„	„ 38·85
„	1895	„	„	„	„	69	„	„ 52·91
„	1896	„	„	„	„	56	„	„ 59·85
„	1897	„	„	„	„	54	„	„ 39·67
„	1898	„	„	„	„	66	„	„ 48·85
„	1899	„	„	„	„	63	„	„ 47·50
„	1900	„	„	„	„	64	„	„ 36·95
„	1901	„	„	„	„	65	„	„ 57·61
„	1902	„	„	„	„	71	„	„ 58·80
„	1903	„	„	„	„	68	„	„ 43·68
„	1904	„	„	„	„	70	„	„ 37·01
„	1905	„	„	„	„	68	„	„ 31·40
„	1906	„	„	„	„	60	„	„ 53·93
„	1907	„	„	„	„	70	„	„ 43·45
„	1908	„	„	„	„	72	„	„ 43·79
„	1909	„	„	„	„	70	„	„ 45·15
„	1910	„	„	„	„	70	„	„ 34·77
„	1911	„	„	„	„	72	„	„ 36·47
„	1912	„	„	„	„	72	„	„ 32·20
„	1913	„	„	„	„	73	„	„ 42·76
„	1914	„	„	„	„	72	„	„ 36·86
„	1915	„	„	„	„	75	„	„ 56·14
„	1916	„	„	„	„	74	„	„ 58·23
„	1917	„	„	„	„	70	„	„ 36·62
„	1918	„	„	„	„	70	„	„ 37·87
„	1919	„	„	„	„	70	„	„ 49·56
„	1920	„	„	„	„	70	„	„ 30·09
„	1921	„	„	„	„	74	„	„ 30·32
„	1922	„	„	„	„	70	„	„ 35·14

AVERAGE MONTHLY RAINFALL 1922.

January	1·30
February	1·38
March	3·60
April	3·20
May	1·34
June	1·25
July	3·56
August	3·43
September	6·84
October	3·08
November	2·53
December	3·63
	35·14

The average rainfall for 49 years is 44·18 inches so that the rainfall for the year 1922 is 9·04 inches below the average.

METEOROLOGICAL SUMMARY, 1922.

KEPT AT THE BOTANIC STATION, ANTIGUA.

Month.	Thermometer.				Relative Humidity. per cent.		Maximum.	Minimum.	Barometer Reading.		Wind.			Rainfall.	Barometer Corrected.		Thermometer	
	Dry.		Wet.								Miles run.	Average.			Highest.	Lowest.	Highest Max.	Lowest Min
	9 a.m.	3 p.m.	9 a.m.	3 p.m.	9 a.m.	3 p.m.			9 a.m.	3 p.m.		Per day.	Per hour.					
January ...	78·7	80·9	74·1	75·5	77·7	74·7	82·8	70·4	30·029	29·946	4,300	143·3	6·06	1·21	30·136	29·845	87	68
February ...	78·9	82·8	73·6	75·4	74·6	66 2	83·5	71·0	30·072	29·988	5,950	212·5	8·88	1·59	30·139	29·943	85	68
March ...	79·4	81·9	74·5	75·8	76·8	72·2	83·3	70·2	30·056	29·988	6,475	208·8	8·7	3·04	30·147	29·836	87	66
April ...	80·5	81·8	74·8	75·6	73·1	71·2	83·8	71·5	30·080	29·994	5,950	198·3	8·2	4·29	30·145	29·961	86	68
May ...	82·0	82·7	75·6	76·0	70·1	68·2	84·9	73·1	30·031	29·969	5,780	186·4	7·8	2·69	30·083	29·910	87	70
June ...	83·2	85·1	77·4	77·8	73·2	67·2	86·6	74·6	30·044	29·977	6,300	210·0	8·8	0·93	30·123	29·908	88	71
July ...	83·0	84·5	76·8	77·5	71·2	68·8	86·4	74·5	30·083	30·028	6,025	200·8	8·4	4·06	30·127	29·991	88	71
August ...	83·0	84·0	76·8	77·6	71·4	70·7	86·7	74·0	30·006	29·905	5,750	185·5	7·7	4·39	30·117	29·888	88	70
September ...	81·6	83·5	77·3	77·6	75·4	72·9	85·5	73·7	29·972	29·904	5,700	190·0	7·9	6·55	30·042	29·957	88	71
October ..	82·9	83·9	77·4	77·5	74·0	70·9	86·3	73·7	29·962	29·878	3,505	113·1	4·7	3·71	30·049	29·819	88	69
November ...	82·6	82·3	76·2	75·9	70·8	70·9	85·0	72·8	29·954	29·875	3,365	112·2	6 8	2·83	30·049	29·811	88	70
December ...	79·5	80·2	74·8	75·4	77·1	76·9	82·8	70·5	30·059	29·972	4,910	163·7	6·8	5·92	30·135	29·868	85	67
											64,010			41·21				
Means for the year.	8·12	82·9	75·7	76·5	73·8	70·9	84·8	72 5	30·029	29·958		173·3	7·3					

Highest Maximum Temperature = 88° on 26th June, 3rd, 4th, 17th, 18th, & 31st July, 10 days, in August, 2 days in September, 5 days October, and 2 days in November. Lowest Minimum Temperature = 66° on 29th March. Highest Barometer (corrected) = 30·147 on 6th March. Lowest Barometer (corrected) = 29·570 on 16th September, 1922. Greatest number of miles run by Wind in 24 hours = 1,005 on 15th September Greatest Rainfall in 24 hours = 2·16 on 15th September. Earthquakes recorded = 3 ; on 31st March, 18th October, 20th December.

Publications on Sale

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FOR THE WEST INDIES.

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